

WE CLAIM

1. A method of determining a television viewer's viewing habits, the method which comprises:

recording a viewer's monitor behavior with data item variables selected from the group consisting of watch date, watch start time, watch duration, and watch channel;

5 inputting historical data information regarding demographic information tagged to the viewer;

inputting program guide information; and

associating the program guide information with the viewer's monitor behavior and defining therefrom a knowledge base with demographic cluster information of the viewer in terms of

10 statistical state machine transition models.

2. The method according to claim 1, wherein the step of defining the knowledge base comprises calculating a parameterized transition matrix defining the viewer's viewing habits, the transition matrix containing information of program transitions initiated by the viewer.

3. The method according to claim 2, which comprises defining at least two concurrent transition matrices including a channel matrix and a genre matrix.

4. The method according to claim 2, which comprises defining the transition matrix as a two-dimensional matrix with transitions from television channels to television channels in temporal form.

5. The method according to claim 1, which comprises providing feedback information with the viewer's monitor behavior by recording a click stream.

6. The method according to claim 1, which comprises parameterizing the viewer's monitor behavior with a double random pseudo hidden Markov process, and defining a low-level statistical state machine modeling a behavioral cluster and a top-level statistical state machine with active behavioral clusters and an interaction between the active behavioral clusters.

7. The method according to claim 6, which comprises defining the double random process with a plurality of dimensions, and determining parallel statistical state machine transition events in at least two of three state categories including channel, genre, and title.

8. A machine-readable medium having stored thereon a plurality of processor-executable instructions for implementing a function of:

capturing state transitions by defining monitor behavior in a plurality of statistical state machine families each representing a given viewer or demographic group viewing behavior;

5 combining the statistical state machine families into global statistical state machines defined in a global probability density function;

updating and reinforcing the global probability density function upon determining that a given probability function has a higher confidence level than a previous probability density function; and

- 10 outputting a global profile based on the global probability density function, wherein the global profile is suitable for determining programming content of a television server.
9. The machine readable medium according to claim 8, wherein the state transitions represent a television viewer's monitor behavior and the statistical state machines are selected from the group consisting of watch date, watch start time, watch duration, and watch channel.
10. The machine readable medium according to claim 8, wherein the global profile represents demographic cluster information of the viewer in terms of the statistical state machine transition models.
11. The machine readable medium according to claim 8, wherein the state machines are defined in a parameterized transition matrix defining the viewer's viewing habits, the transition matrix containing information of program transitions initiated by the viewer.
12. The machine readable medium according to claim 11, wherein the transition matrix is one of at least two concurrent transition matrices including a channel matrix and a genre matrix.
13. The machine readable medium according to claim 8, wherein the transition matrix is a two-dimensional matrix with transitions from television channels to television channels in temporal form.
14. The machine readable medium according to claim 8, configured to parameterize the viewer's monitor behavior with a double random pseudo hidden Markov process, and

defining a low-level statistical state machine modeling a behavioral cluster and a top-level statistical state machine with active behavioral clusters and an interaction between the active behavioral clusters.

15. The machine readable medium according to claim 8, which comprises defining the double random process with a plurality of dimensions, and determining parallel statistical state machine transition events in at least two of three state categories including channel, genre, and title.